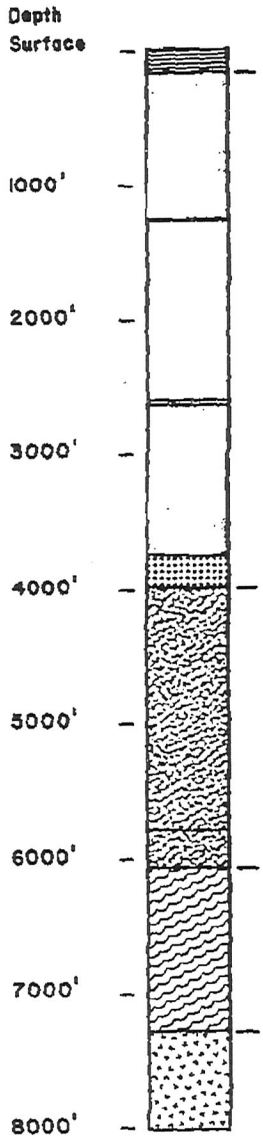
GEOLOGIC INTERPRETATION OF WELL CUTTINGS, CHRESTESEN A-1 TEST WELL



Post-basalt deposits; Idaho and some "upper" Payette Formation sediments

Weiser Basalt

≤ 10' arkosic interbed

Weiser Basalt units

≤ 30' arkosic interbed

Weiser Basalt units; includes dacite, ash flow tuff and andesite

Andesite and basalt; Grande Ronde Basalt possible in this interval

Immaha Basalt

Charcoal fragments; no associated sediments

Pre-Miocene greenstones; probably Seven Devils Volcanics

Granitic basement

T.D. 8008'

Cuttings interval--10'

Cuttings supplied by Phillips Petroleum Co., Geothermal Division, Salt Lake City, Utah

Cuttings interpretation by Geoscience Research Consultants Moscow, Idaho

DAILY REPORT DETAILED

LEASE Chrestesen A WELL NO. 1 SHEET NO. 1

DATE	NATURE OF WORK	TOTAL DEPTH PERFORMED	
9-26-77		33	Waiting on rotary. Location: 470' FNL & 300 FWL, Sec. 29-1N-3W, Washington Co., Idaho. 8000' Geothermal test. Phillips Petroleum Company 100%. AFE-PE-5518. MI & RU Burns Rathole Diggers. Spudded 24" hole at 8:00 a.m., 9-25-77. Drilled to 33' ground level. Reamed 42" hole to 27'. Ran 1 jt. of 30" OD, 1/4" wall, 73.9#, PE conductor pipe at 27'. Cemented with 10 sacks cement grout mix w/2% $CaCl_2$. Filled outside casing to bottom of cellar, job completed at 1:00 p.m. 9-25-77, WOC. Elevation: GL 2668'-RKB 2691'.
10-12-77		43	Drilling sand. MI&RU Brinkerhoff Drilling Co., Rig #32. Spudded 12¼" hole at 3:00 am 10-12-77, drilled to 43' and came out of hole to pick up drilling assembly. (12¼" bit, 6-point reamer, 3-rib stabilizer, short DC, 3-rib stabilizer, 1 DC and 3-rib stabilizer.) Mud 8.7#, Vis 43.
10-13-77		322	Drilling Basalt. Stuck DP at 234' while running Totco. Worked pipe free in 2 3/4 hrs. Circulated and conditioned hole 1/2 hr. Trip for bit at 315'. Mud 8.6, Vis. 45. Totco: 1/8° at 128'; 1/8° at 225'; 1/8° at 310'.
10-14-77		536	Drilling Basalt. Trip for bit at 536'. Mud 8.6, Vis. 60. Flow line temperature: 536'-97°F in, 100°F out.
10-15-77		832	Drilling Basalt. Mud 8.6, Vis. 70. Trip for bit at 801'. Totco 3/4° at 801'. Flow line temperature at 832', 113°F in, 119°F out.
10-16-77		1056	Drilling Basalt. Mud 9.0, Vis, 46. Flow line temperature at 1072'-116°F in 118°F out.
10-17-77		1290	Drilling Basalt. Trip for bit at 1195'. Mud 9.4, Vis. 60, WL 10.8, FC 2/32, pH 9.5, oil 5%. Totco 1/4° at 1195. Flow line temperature at 1290'-120°F in, 122°F out.

DAILY REPORT DETAILED

LEASE Chrestesen A WELL NO. 1 SHEET NO. 2

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
10-18-77	1560	Drilling basalt and clay. Mud 9.5, Vis. 60, WL 8.6, FC 2/32, oil 3.6%, pH 9.8, YP 18. Flow line temperature at 1560'-123°F in, 126°F out.
10-19-77	1840	Drilling basalt. Mud 8.9, Vis. 60, FC 2/32", diesel oil 4%. Flow line temperature at 1840'-125°F in, 127°F out.
10-20-77	1848	Reaming hole to 17 1/2" at 265'. Mud 9.6, oil 4%. Totco 1/4° at 1848. Flow line temperature at 1854'-126°F in, 128°F out.
10-21-77	1848	Reaming 17 1/2" hole at 372'. Shock sub failed at 265', COOH, laid down shock sub, WIH, reaming ahead. Mud 9.5, Vis. 56, WL 8.8, FC 2/32, oil 3.4%, pH 10.
10-22-77	1848	Reaming basalt at 520'. Mud 9.4, Vis. 55, oil 3% pH 9.5. Trip for bit at 265'.
10-23-77	1848	Reaming basalt & red cinders at 676'. Mud 9.7, Vis. 57, oil 3%. Trip for bit at 537'. Ran BHA as follows: Bit, 3 point reamer, DC, stabilize, shock sub, stabilizer.
10-24-77	1848	Reaming basalt at 864'. Mud 9.3, Vis. 55, oil 2%.
10-25-77	1848	Reaming Basalt & Black Shale. Mud 9.4, Vis 100+, FC 2/32, Oil 2%, pH 9.5.
10-26-77	1848	Reaming basalt at 1238'. Trip for bit at 1171'. Mud 9.2, Vis. 110, WL 7.7, FC 2/32, oil 2%. Totco 1/2° at 1160'.
10-27-77	1848	Reaming basalt at 1426. Mud 9.3, Vis. 80, WL 8.4, FC 2/32, oil 2% pH 9.5.
10-28-77	1848	Trip for new bit. Reamed 17 1/2" hole to 1609', started out of hole. Mud 9.3, Vis. 85.

DAILY REPORT DETAILED

LEASE Chrestesen A WELL NO. 1 SHEET NO. 3

DATE	NATURE OF WORK	TOTAL DEPTH PERFORMED	
10-29-77		1848	Reaming 17 1/2" hole at 1652'. Pulled out of hole, shock-sub seals appeared to be leaking. Laid down shock-sub, went in hole, rotary hose blew out. Replaced rotary hose, had leak in gooseneck. Replaced goose neck, went in hole breaking circulation each stand.
10-30-77		1848	Reaming basalt at 1780'.
10-31-77		1848	Logging. Reamed 17 1/2" hole to 1780', circulated & conditioned hole. Started logging.
11-01-77		1848	WOC Finish logging. (Ran GR-IES, Sonic, Caliper & temperature). Maximum temperature 117 1/2°F. Ran DP & 17 1/2" bit, circulated and washed to 1780'. Ran 45 jts, 1768', 13 3/8" OD 54.5#, K-55, R-3, BT&C casing, set at 1768' RKB. Cemented with 1330 sacks Class G cement, 1:1 Perlite, 40% Silica flour, 3% Gel. Pumped plug to 1307'. Good cement returns when plug to 1250'. Job complete at 11:45 p.m. 10-31-77. WOC 8 hrs.
11-02-77		1848	Nippling up. WOC 22 hrs.
11-03-77		1848	Nippling up. Cut off 13 3/8" casing. Installed 13 3/8" X 12" 900 WKM Braden head, (top of BH flange 44" below top of matting boards) 2 dble. BOP's, 12" 900 Hydril, 12" 900 Grant drilling head w/6" hydraulic flow line valve.
11-04-77		1852	Coming out of hole to pick up bottom hole assembly. Tested blind rams to 1225#-20 mins., 1st pipe rams to 1150#-20 mins., 2nd pipe rams to 1200#-20 mins., 3rd pipe rams to 1175-20 mins., hydril to 525#-10 mins. WIH, drilled cement 1371' to 1775', circulate and wash to bottom, drilled to 1852' and started out of hole.
11-05-77		2016	Drilling basalt. Mud 8.6, Vis. 47, FC 2/32. Drilled to 1894', pulled out of hole and picked up BHA (bit, 6 pt. reamer, stabilizer, short DC & stabilize). Flow line temperature at 2016'-107°F in, 110°F out.
11-06-77		2235	Drilling basalt. Mud 9.2, Vis. 40, FC 2/32. Flow line temperature at 2230'-108°F in, 110°F out.

DAILY REPORT DETAILED

LEASE Chrestesen A WELL NO. 1 SHEET NO. 4

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
11-07-77	2425	Drilling basalt. Mud 9.0, Vis. 41, WL 12.6, FC 2/32. Totco 0 deg. at 2350'. Flow line temperature at 2425'-110°F in, 112°F out.
11-08-77	2650	Drilling quartz c/trace of basalt. Mud 9.0, Vis. 42, FC 2/32, oil 3%, pH 10.4. Flow line temperature at 2640'-110°F in, 113°F out.
11-09-77	2810	Drilling basalt, clay & quartz. Trip for bit at 2779'. Temp-plate on totco indicated 110°F. Tight hole off bottom, had 60' fill. Totco 1° at 2740'. Installed shock sub. Mud 9.1, Vis. 60, WL 8.4, FC 2/32, 3% oil. Flow line temperature at 2810', 110°F in, 112°F out.
11-10-77	3030	Drilling shale, basalt and quartz. Mud 9.3, Vis 55, FC 2/32, oil 3%. Flow line temperature at 3024', 116°F in, 118°F out.
11-11-77	3225	Drilling Basalt. Mud 9.2, Vis. 52, WL 8, FC 2/32, oil 5%. Flow line temperature at 3220'-122°F in, 124°F out.
11-12-77	3325	Drilling basalt. Mud 9.1, Vis. 55. Trip for bit at 3323'. Totco 1° at 3223'. Flow line temperature at 3320'-116°F in, 120°F out. Drilling hard at 3280', torquing badly, pulled out of hole, washed and reamed 70' to bottom.
11-13-77	3475	Drilling Basalt. Mud 9.1, Vis. 70. Flow line temperature at 3370', 128°F in, 130°F out.
11-14-77	3658	Drilling Basalt. Mud 9.4, Vis. 60, WL 7.8, FC 2/32, oil 4%, pH 9.8. Flow line temperature at 3648'-129°F in-132°F out.
11-15-77	3870	Drilling basalt. Mud 9.5, Vis. 60, WL 7.4, FC 2/32, oil 3%. Drilled a limey-clay section 3809-27'. Flow line temperature at 3853'-131°F in, 135°F out.
11-16-77	3987	Trip for bit. Mud 9.4, Vis. 59, WL 7.4, FC 2/32, oil 5%, pH 9.5. Came out of hole for new bit, hole sloughing, washing to bottom 3 1/2 hrs. Totco 2° at 3987'. Flow line temperature at 3987'-131°F in, 134°F out.

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LEASE Chrestesen A WELL NO. 1 SHEET NO. 5

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
11-17-77	4201'	Drilling basalt & fr. quartz. Mud: 9.5#, 74 Visc. & FC 2/32. Flow line temperatures: 4180' 134°F in and 136°F out 4200' 134°F in and 137°F out
11-18-77	4460	Drilling basalt & 20% quartz. Mud: 9.9#, 76 Visc. & 3/32 F.C. Flow line temperature: 4460' 140°F in and 144°F out.
11-19-77	4520	Circulating & conditioning hole to run casing. Drilled 12 1/4" hole to 4520' 11-18-77. Flow line temperature at 4500'-140°F in 144°F out.
11-20-77	4520	Running casing. Ran IES-GR log. Max. temp. 154°F. Rigged up to run casing.
11-21-77	4520	Waiting on cement. Ran 9 5/8" OD, 40#, K-55 BT&C casing, set at 4520' RKB. Cemented w/920 sacks class G cement, 1:1 perlite, 2% gel, 40% silica flour, 3/4% D-31 & 1% R-11. Plug down at 6:45 p.m. 11-20-77, good cement returns to surface.
11-22-77	4520	Nippling up. WOC 9 hrs., cut off 9 5/8" casing, started nippling up.
11-23-77	4520	Going in hole to drill cement. Finished nippling up. Tested all lines, OK. Tested BOP blind rams to 1000#, 15 mins. OK. Tested pipe rams and hydril (will report test later).
11-24-77	4590	Drilling basalt & quartz. Finished nippling up, tested blindrams to 1000#, 15 mins., OK; pipe rams to 1000#, 15 mins. OK; hydril to 500#, 15 mins., OK & choke manifold to 1500#, 15 mins., OK. Drilled cement 4420-4520', started 8 1/2" hole at 4520'.
11-25-77	4827	Drilling basalt. Mud 9.8, Vis. 45, WL 12, FC 2/32, pH 10.8. Trip for bit at 4610'. Flow line temperature at 4827', 131°F in, 134°F out.
11-26-77	5232	Drilling basalt. Mud 9.8, Vis. 43, WL 11.4, FC 2/32, pH 9.8. Flow line temperature at 5232', 131°F in, 137°F out.

DAILY REPORT DETAILED

LEASE Chrestesen A WELL NO. 1 SHEET NO. 6

DATE	TOTAL DEPTH PERFORMED	NATURE OF WORK
11-27-77	5501	Tripping. Mud 10.0, Vis. 44, WL 10.8, FC 2/32", pH 9.5. Totco 1 3/4° at 5501'. Flow line temperature at 5376', 132°F in, 138°F out.
11-28-77	5807	Drilling basalt & quartz. Mud 10.1, Vis. 52, WL 10.6, FC 2/32, flow line temperature at 5800', 139°F in, 145°F out.
11-29-77	5887	Drilling granite. (Arkose ?) Drilled to 5883', circulated 2 3/4 hrs. Pulled out of hole. Rigged up and ran Agnew & Sweet temperature survey to 5883'. Temperatures as follows: (DOG F)

Depth-Temp.	Depth-Temp.	Depth-Temp.	Depth-Temp.
100- 95.9	1600-135.3	3100-150.8	4600-172.6
200- 98.6	1700-135.3	3200-152.6	4700-178.0
300-101.2	1800-135.3	3300-156.9	4800-181.4
400-111.8	1900-136.6	3400-158.1	4900-183.5
500-119.8	2000-136.6	3500-159.3	5000-186.6
600-123.2	2100-137.5	3600-160.5	5100-189.0
700-124.8	2200-140.3	3700-160.5	5200-193.3
800-125.1	2300-141.6	3800-162.0	5300-194.8
900-125.7	2400-144.0	3900-165.4	5400-196.6
1000-126.6	2500-145.0	4000-165.4	5500-203.9
1100-129.7	2600-145.6	4100-165.4	5600-209.7
1200-131.3	2700-146.5	4200-165.4	5700-212.5
1300-132.5	2800-149.0	4300-166.3	5800-215.4
1400-132.9	2900-149.6	4400-169.0	5883-238.2
1500-134.1	3000-150.8	4500-171.4	

After 15 mins. on bottom at 5883', temperature 240°F. Went in hole with bit, drilling ahead. Mud 10.1, Vis. 52, WL 11, FC 2/32, pH 9.8. Totco 1 3/4 degrees at 5585'.

11-30-77	6128	Drilling basalt. Had slow mud loss, approximately 250 bbls, hit fractures 6104-08', lost 50 bbls. Mixed 5% LCM, filled loss zone and drilling with slight mud loss. Mud 9.6, Vis. 60, WL 10.8, FC 2/32, LCM 5%. Flow line temperatures: 6050', 138°F in, 146°F out; 6100', 116°F in, 128°F out, losing mud.

LCM = [illegible]

DAILY REPORT DETAILED

LEASE Chrestesen A WELL NO. 1 SHEET NO. 7

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
12-01-77	6244	Drilling basalt & quartz. Lost complete returns at 6215' (lost est. 1200-1500 bbls.). Mixed pit of high vis. mud w/20-25% LCM, spotted mud on bottom, pulled out of hole. Picked up new bit, went in hole, broke circulation at bottom of casing, went to bottom with full returns. Mud 9.2, Vis. 46, WL 9.6, FC 2/32, LCM 20-25%, pH 9.0. Flow line temperature: 6225'-100°F in, 110°F out, 6244'-118°F in, 124°F out.
12-02-77	6427	Drilling Basalt. Lost circulation at 6427', lost full returns. Spotted mud pill on bottom, no returns. Mixed second pill w/40% LCM, let set. Went in hole, broke circulator, drilling with full returns. (Lost est. 800 bbls.). Mud 9.0, Vis. 53, WL11, FC 2/32, LCM 25%, pH 9.0.
12-03-77	6629	Drilling Basalt & quartz. Lost circ at 6562', mixed pit of mud & spotted on bottom, pulled up into casing, let mud set. Went to bottom, circulated with full returns. Mud 9.2, Vix 45, WL 8.6, FC 2/32, LCM 25%, pH 9.0.
12-04-77	6864	Drilling Basalt & quartz. Drilling with slight mud loss. Mud 9.2, Vis 45, WL 8.6, FC 2/32, LCM 40%, pH 9.0. Flow line time at 6864', 122 Deg F in, 124 Deg F out.
12-05-77	7035	Tripping and mixing mud. Trip for bit at 7035'. Totco 2 Deg at 7035'. Max temp on Totco 180 Deg F. Flow line time at 6932', 124 Deg F in, 128 Deg F out. Had slight mud loss last 24 hrs. Mud 8.9, Vis 47, WL 9.2, FC 2/32, LCM 15%, pH 9.2.
12-06-77	7179	Drilling Basalt & quartz. Mud 9.1, Vis 43, WL 8.6, FC 2/32, LCM 20%, pH 9.0. Full returns last 24 hrs. Flow line temp: 7173" 135 Deg F in, 142 Deg F out; 7179' 138 Deg F in, 143 Deg F out.
12-07-77	7284	Drilling basalt. Trip for bit at 7276'. Totco 2 Deg. at 7276, temp. strip 180°F. Mud 9.2, Vis. 48, WL 8.0, FC 2/32, LCM 20%, pH 9.2. Flow line temp. at 7276'-143°F in, 149°F out. No mud loss 24 hrs.
12-08-77	7460	Drilling granite. Mud 9.2, Vis. 48, WL 7.6, FC 2/32, LCM 20%, pH 9.5. Top of granite 7280'. Flow line temp. at 7455', 146°F in, 150°F out.

DAILY REPORT DETAILED

LEASE Chrestesen A WELL NO. 1 SHEET NO. 8

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
12-09-77	7538	Tripping, granite. Mud 9.2, Vis. 46, WL 7.6, FC 2/32, LCM 15%, pH 9.5. Totco 2 1/4 deg. at 7538'. Flow line temp. 7490'-148°F out. (Cleaned pits and added cold water).
12-10-77	7670	Drilling tuff. Mud 9.1, Vis. 46, WL 8.2, FC 2/32, LCM 18%, pH 9.4. Flow line temperature at 7653'-130°F in, 141°F out.
12-11-77	7862	Drilling granite. Mud 9.0, Vis. 46, WL 8.0, FC 2/32, LCM 10%, pH 9.0. Flow line temps: 7787'-142°F in, 148°F out; 7856'-147°F in, 154°F out..
12-12-77	8000	Pulling out of hole to log. Drilled 8 1/2" hole to 8000' at 12:35 am 12-12-77. Circ. 3 1/4 hrs. and started out of hole. Flow line temp. at 7998', 152°F in, 160°F out. After circ. 3 hrs., 157°F in, 164°F out.
12-13-77	8008	Running temperature survey. Strapped out of hole, corrected TD 8000' to 8008'. Ran Agnew & Sweet temperature survey, 5 hrs., after circulation, max. temp. at 7996' 265.5°F, after 20 mins.-266.8°F. Ran Schlumberger density, sonic, IES, GR-N, caliper logs. Started running Agnew & Sweet temperature survey.
12-14-77	8008	Laying down drill pipe. Ran Agnew & Sweet temperature survey, unable to get below 6430'. Max. temp. 6430'-260.9° F.
12-15-77	8008	Running tubing. Finished laying down drill pipe. Nippled down BOP, installed tubing head. Started running tubing.
12-16-77	8008	Tearing down rotary. Ran 254 jt., 7964' LTM, 2 7/8" OD, 6.5#, J-55, EUE tubing, bottom joint muleshoed. Set tubing at 7881' RKB. Filled tubing with water, installed gate on top and locked well head. Released rig at 12 midnight 12-15-77. Dry hole held for temperature observation. FINAL REPORT

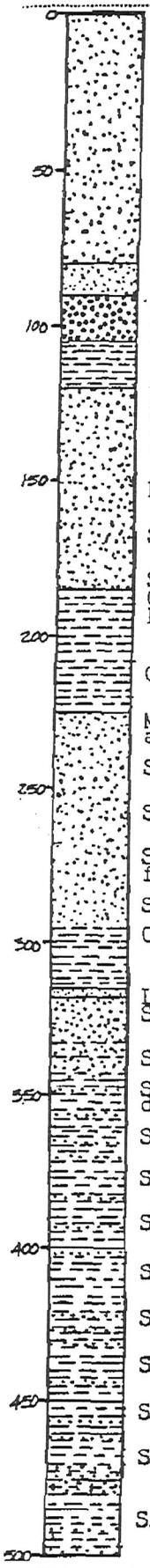
DAILY REPORT DETAILED

LEASE Chrestesen A WELL NO. 1 SHEET NO. 1

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
10-12-78	8008	Rigging up to pull tubing and plug well. Moved in Pool Well Service rig. No anchors available for guylines. Prepared well head to pull tubing. SD overnite.
10-13-78	8008	Laying down tubing. Dug anchor holes, installed anchors, rigged up. Installed 6" 900 Double Gate BOP. Pulled on tubing, tubing stuck. Pulled and worked tubing 5 hrs., worked free. Laid down 8 jts tubing, SD overnite.
10-14-78	8008	Preparing to spot cement plugs. Pulled 254 jts 2 7/8" OD tubing. Laid down mule shoed jt. Ran 2 7/8" tubing open-ended to 4600'. Laid down 3280' tubing. Shut down overnite.
10-15-78	PTD 20	Well plugged. Hooked up Halliburton, pumped 75 bbls water down tubing, hole circulated. Mixed 75 sx class G cement, spotted plug #1 4600 - 4400'. Pulled tubing to 1800'. Mixed 75sx class G cement, spotted plug #2 1800 - 1600'. Pulled and laid down tubing. Reran 120' 2 7/8" OD tubing open-ended. Spotted plug #3 120 - 20'. Removed BOP, installed flange w/2 7/8" OD nipple and gate on top of 6" 600 x 10" 600 tbg spool. Well plugged and abandoned in manner it can be re-entered. Release Pool Well Service Company 5 p.m. 10-14-78. FINAL REPORT

BY ..... DATE ..... SUBJECT Wash (1) Drill 11N-3W Sec 5 SW¼ Sec 32 SHEET NO. ..... OF 7

CHKD. BY ..... DATE ..... JOB NO. 17-2-1



Poorly sorted qtz. sandstone, 0.1-2mm. Several percent biotite and chain silicates in same size range. Some limonitic cementation.

Sandstone as above, more material in lower size range, more mafics. Opal, chalcedony fragments. Trace cinnabar.

Sandstone as above, considerable silicification. Opalite fragments to 10mm. Cinnabar

Fine grained quartz sandstone (≈1-2mm). Clear qtz. with yellow brown iron stain. Strongly cemented with silica (opal?). Fragments to 12mm.

Opal present.
Qtz. sandstone. Clear qtz., 2-3mm.

Coarse sand, poorly cemented. Clear, subrounded qtz. with limonite stain. Limonite frags in same size range.

Yellow brown soft clay.

Medium grained sandstone (2-3mm). Clear to gray subrounded qtz. and some feldspar. Trace opal frags, some dark (sphalerite?) overgrowth.

Increasing roundness, 2mm grain size, less feldspar.

Minor limonite cemented fine grained ss. Qtz. grains contain biotite.

Sandstone as above.

Sandstone as above.
Clay. Bluish cast overall, slightly varigated with brownish orange color in upper portion, becoming blue grey near base.

Clay as above.

Medium to coarse sands, most grains ≈2mm, some to 5mm. Subangular. Qtz. predominate and contains biotite as above.

Sandstone as above.

Sandstone as above.

Sands as above, frags of opal, opal cemented ss and limonite, possibly washed down from above.

Sandstone as above.

Clay, medium grey, viscous.

Light grey siltstone.
Sands, subangular quartz. Some opal frags. Trace well X'lized pyrite.

Sands as above, lt. grey clay present. Trace opal, cinnabar.

Some sands as above, but dk. grey clay, dk. grey siltstone and lt. grey mudstone dominate.

Siltstone, lt. grey mudstone predominant.

Siltstone as above.

Siltstone, fragment of cinnabar(?) cemented ss.

Siltstone, dk. grey.

Siltstone as above, sand fragments increase.

Siltstone as above, sand fragments decrease.

Siltstone as above.

Siltstone as above, some chert fragments.

Siltstone.

500 Siltstone as above, clay.

Sandstone, subrounded, 1-3 mm, qtz. with feldspar. Some granitic fragments. Trace pyrite cemented sandstone.

Sandstone, qtz. fragments to 6mm. Clay fraction increases.

550 Black siltstone.
Blue clay.

Set casing, cemented. No returns collected by driller.

Siltstone, light grey to bluish grey. Contains biotite and fine grained qtz.

Sandstone, Qtzitic. Subrounded grains 2-5mm.
Sandstone, Qtzitic. Subrounded grains 1-4 mm. Carries minor biotite in qtz.

600 Sandstone as above. Decreasing grainsize, 1/2-2mm range, most in lower range.

Sandstone, very fine grained, subrounded to subangular qtz.
Claystone, bluish grey, drills to blue sticky clay.

Claystone as above.

650 Sandstone, Qtzitic, subrounded to subangular, 1/2-2mm.
Sandstone, Qtzitic, minor biotite. Subangular to angular. Poor sorting, 1/2-3mm range.

Sandstone, Qtzitic, 1% biotite, subangular. 1/2-1mm range.

Blue shale included in above sample.
Blue shale.
Sandstone, Qtzitic, 2mm.
700 Grey siltstone.
Interbedded, grey siltstone and blue claystone.

Siltstone and claystone as above, lt. grey claystone and micaceous zones.

As above.
Sandstone, qtz. and feldspar. 1-2mm range. Minor pyrite.
750 Siltstone and claystone. Brown, grey and bluegrey.

Claystone, bluish and siltstone, brown. Calcite veinlets (plate like fragments).

Claystone, blue. Decreased brown siltstone.

As above.

800 As above, claystone better indurated, frags to 2cm.

Claystone, blue.

Claystone, greenish blue.

850 Claystone, greenish grey to grey.

Siltstone, lt. grey. Claystone blue green.

Basalt, Aphanitic, slightly vesicular. Black to red in color. Some chalcedony vesicular fillings. Calcite fracture fillings.

900 Basalt as above. Blue zeolitic(?) vesicle fillings.

Basalt, Aphanitic, black, blue vesicle fillings.

Tuff?? Blue to grey, fine grained.

Basalt, aphanitic, black to red. Vesicular.

950 Basalt, as above.

Basalt, as above, strong blue zeolite filled vesicle fillings.

Basalt, as above.

Basalt, as above.

1000

1000 Basalt, aphanitic, black.

Basalt as above.

Shale, well compacted, mostly green, some grey.

1050 Shale, as above, greenish grey.

Shale, as above.

Shale, green, grey, black.

Shale, as above.

1100 Basalt contact. Fine grained, black, minor zeolite filled vesicular basalt.
Basalt, black, fine grained. Trace pyrite.

Basalt, as above, more calcite and qtz. vesicle fillings.

Basalt, fine grained, trace pyritic serpentine.

1150 Basalt, as above, same reddish brown scoraceous flow material.

Basalt, fine grained, black, minor reddish brown, (Note: Large fragments of shale to 3/4 inch, probably washed from shale zone above.)

Basalt, as above. (Note: Shale also present, washed from higher zone?)

1200 Basalt, pyroxene and feldspar visible. Pyritic.

Basalt, fine grained.

Basalt, fine grained, black, reddish brown contact material.

Basalt, as above.

1250 Basalt, black, fine grained. Calcite. (Note: Large shale fragments. From above?)

Basalt, as above, reddish contact material.

Basalt, reddish brown, glass fragments. Some shale possibly present.

1300 Basalt, black, fine grained.

Basalt, as above, qtz. & serpentine fracture fillings. Small amygdaloids of qtz., serpentine, calcite.

Basalt, serpentine, trace pyrite, trace red glass.

1350 Basalt, zeolitic amygdaloids. Contact with baked shale?

Shale, minor basalt. Shale is greenish grey and glassy black. (Note: Shale looks fresh, possibly from upper zone also.)

Shale-basalt. Basalt is fine grained, fresh appearance.

Missing samples. (Drillers error? No sample collected.)

1400 ???

Basalt, fine grained, black. Calcite.

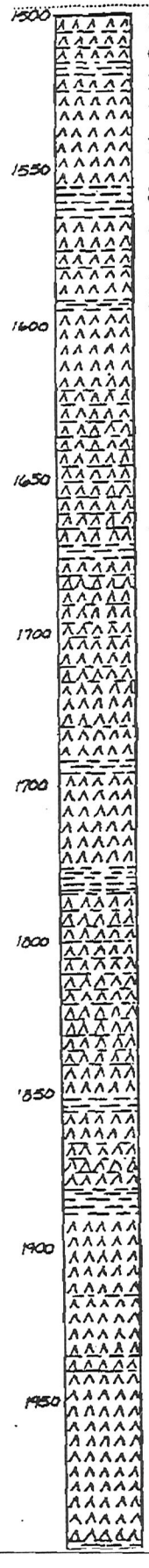
Basalt as above. Reddish brown baked shale. Black brittle shale. Green shale.

Shale and basalt as above.

1450 Shale and basalt as above.

Basalt and shale as above, vesicular.

Basalt and shale as above.



1500 Basalt, aphanitic, vesicular. Ranges from dense black, through black with small (2mm) vesicles, filled with blue zeolites (?) to red vesicular contact phase with qtz. fillings. Blue and grey shale, some red shale from contact.

Basalt as above, less red contact material, more shale.

Basalt as above.

Basalt as above. Chalcedony veinlets and vesicle fillings common.

1550 Shale, lt. green, waxy luster to silty grey. Basalt as above also present. Qtz. and chalcedony fragments from veinlets.

Basalt and shale as above.

Basalt as above, qtz. veinlets common. Some slickensides. Green and grey shale and siltstone.

1600 Basalt, fine grained, some porphyritic frags with clear plagioclase. Qtz., opal, calcite in vesicular fillings.

Basalt as above. Opal and zeolite (?) fillings common. Blue to grey shale.

Basalt, becoming porphyritic with clear, striated plagioclase and pyroxene(?). Red contact phase still present. Qtz. veinlets and opal + qtz. vesicle fillings. Some shale.

1650 Basalt as above.

Basalt as above, more red baked shale. Contact with blue to greenish brown silty unit(?). Qtz. and opal vesicle fillings.

Basalts and shale as above. Slickensides in shale and basalt. Basalt increases.

Basalt, less porphyritic, qtz.-jasper veinlet. Agate, zeolites and slickensides.

1700 Basalt, porphyritic as above. Continued shales and silty shales, some red (baked?).

Basalt, as above.

Basalt as above; many large shale fragments; silty; red, grey, black.

1700 Basalt, porphyritic, trace pyrite. Minor vesicular red frags filled with zeolites.

Basalt, mostly fine grained, vesicular, some porphyritic. Shales, red, grey, green, fissile black.

Basalt and shales as above.

1800 Basalt, porphyritic, vesicular, little shale.

Basalt, as above, but many small vesicles. Green chlorite? alteration and fillings. Qtz., opal, zeolite frags. Some shale, mostly baked.

Basalt, more porphyritic. Increased shale, red, brown, green.

Basalt as above, some red and black fine grained contact phase. Some chlorite, opal and qtz. Shale, red and green.

1850 Basalt and shale as above.

Basalt and shale, increasing shale, mostly green.

Basalt, fine grained, vesicular. Shale, red and green

1900 Basalt, black, fine grained. Some green and red shale.

Basalt and shale as above.

Basalt, black, fine grained, slightly vesicular. Shale, red, grey, brown.

1950 Basalt as above, minor shale.

Basalt as above.

Basalt as above, but more vesicular. Strong blue zeolite(?) vesicle fillings.

Basalt as above, silty white to grey soft shale.